WAKE, DAVID B. 1965. *Aneides ferreus*, p. 16. *In* W. J. Riemer (ed.), Catalogue of American Amphibians and Reptiles. American Society of Ichthyologists and Herpetologists, Kensington, Maryland.

Aneides ferreus Cope
Clouded salamander

Anaides ferreus Cope, 1869:109. Type-locality, "Fort Umpqua, [Douglas County], Oregon." Holotype, U.S. Natl. Mus. 14451, collected by E. P. Vollum. Date of collection and sex unknown.
Autodax ferreus: Cope, 1889:185.
Aneides ferreus: Grinnell & Camp, 1917:135. Stejneger & Barbour (1917:21) are often cited, in error, as the authors of this combination. Grinnell & Camp (11 July 1917) preceded them in its usage by five months.

• CONTENT. The species is monotypic.

• DEFINITION. Adults are of moderate size, with a mean snout-vent length of 60 mm (45–75 mm). The trunk is somewhat depressed. Tail length is considerably less than the snout-vent length; the tail is round. Costal grooves number 16 or 17. The limbs are long, and when adpressed may fail to meet by a space equal to 1½ costal folds, or may overlap by an equal amount. The digits are long; their tips are expanded. The first finger and toe are reduced. The vomerine teeth do not extend to the median margin of the internal nares. The maxillary teeth are long, flattened, and few in number (mean 8, range 5–11).

Adults occur in two color phases. Dorsally the clouded phase is dark brown mottled with brassy, copper, whitish, or greenish gray. This phase is usually associated with a rock habitat. The dark phase is almost uniformly dark brown dorsally with little light coloration; usually it is associated with a log habitat. The venter is considerably lighter than the dorsum, being whitish, or brownish with white speckling, especially ventrolaterally. The temporal region of the head is swollen by the jaw musculature, especially in males. The mouth margins are sinuate, curving dorsad posteriorly.

In juveniles the dorsal ground color is dark brownish with a lighter brassy to copper color present from the eyes to the snout tip, from the base of the head dorsolaterally to the forelimb insertion, and on dorsal parts of the tail and limbs.

• DESCRIPTIONS. Egg deposition is described by Storm (1947). Eggs are described by Dunn (1942), Storm (1947), and Stebbins (1951, 1954). Myers (1930), Wood (1939), Storm (1947), and Stebbins (1951) describe the young. External morphology and coloration are treated by Cope (1869, 1889), Storer (1925), Dunn (1926), Slevin (1928), Gordon (1939), Bishop (1943), and Stebbins (1951, 1954). Osteology and dentition of the species are described by Wake (1963). Breeding behavior and spermatophores are not recorded.

• ILLUSTRATIONS. Photographs of adults are present in Slevin (1928) and Bishop (1943); Stebbins (1951, 1954) illustrates adults and (1954) also has drawings of the juvenile. The head, mouth, hands, and feet are illustrated in Cope (1889) and Hilton (1948). Stebbins (1951) also illustrates the foot, and he provides a lateral view of the body. Drawings of throat musculature are present in Hilton (1952). Wake (1963) figures the skull. A habitat photograph is offered by Stebbins (1951).

• DISTRIBUTION. The species occurs at low elevations in coastal California from central Mendocino County northward through Oregon west of the Cascade Mountains to the Columbia River. Farther northward it occurs in British Columbia on Vancouver Island and certain neighboring islands (Carl, 1949; also see COMMENT), but not on the mainland. It inhabits redwood, Douglas fir, and other coniferous forests. In Oregon it is recorded up to at least 1647 meters (5400 feet).

The species is found most frequently under the loose bark of fallen logs in small clearings or at the margins of forests. Individuals commonly are associated with Douglas fir logs, less frequently with Port Orford cedar and alder. They also have been taken 7 meters above the ground in trees, and they are sometimes locally abundant in small rock slides and in moist rock crevices.

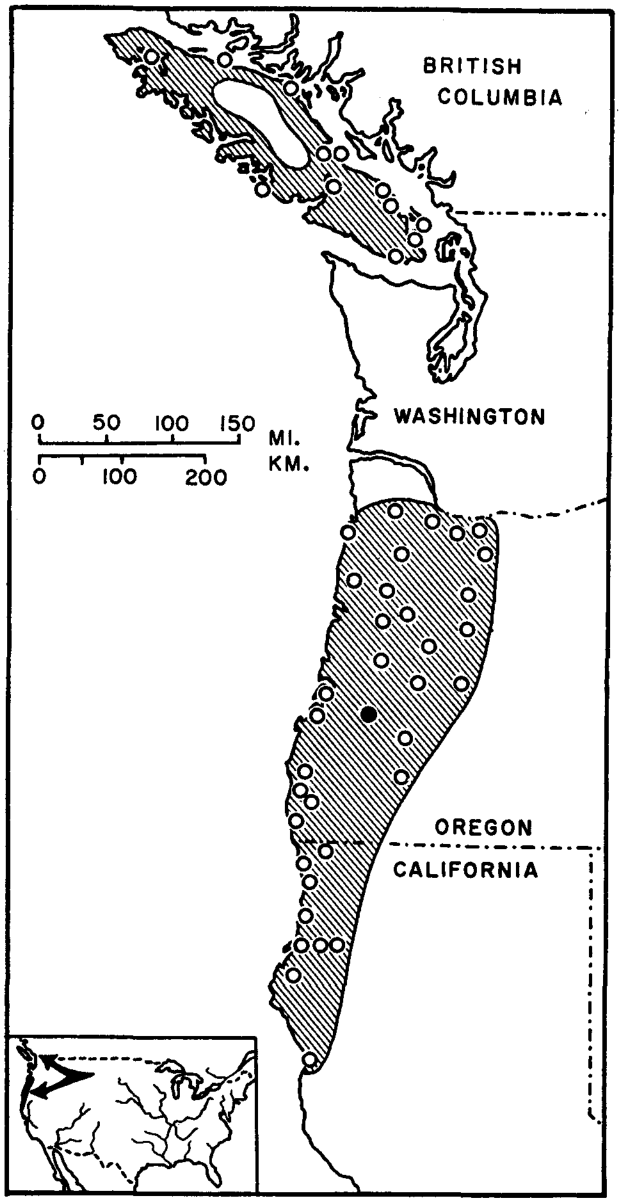
• FOSSIL RECORD. None

• PERTINENT LITERATURE. Food items are recorded by Fitch (1936), and Storm & Aller (1947). Stebbins (1951) describes some aspects of behavior. The habitat is described by Van Denburgh (1916), Storm & Aller (1947), Myers & Maslin (1948), and Stebbins (1951). Relationships with other species are discussed by Dunn (1926), Myers & Maslin (1948), and Wake (1963). Lowe (1950) discusses floral associates.

• ETYMOLOGY. The name is from the Latin *ferreus* meaning "iron-colored," and refers to the metallic dorsal mottling of the clouded color phase.

COMMENT

Aneides ferreus is not known from Washington or the mainland of British Columbia. The Vancouver Island populations are similar to the southern populations in external morphological features and are identical osteologically. Subspecific recognition apparently is not warranted.



MAP. The solid symbol marks the type-locality. Hollow symbols show other known localities. Apparently the species is lacking in the central highlands of Vancouver Island.

Literature Cited

Bishop, Sherman C. 1943. Handbook of salamanders: the salamanders of the United States, of Canada, and of Lower California. Comstock Publ. Co., Ithaca, New York. xiv + 555 pp.

Carl, G. Clifford. 1949. Extensions of known ranges of some amphibians in British Columbia. Herpetologica, 5:139–140.

Cope, E[dward] D. 1869. A review of the species of the Plethodontidae and Desmognathidae. Proc. Acad. Nat. Sci. Philadelphia, 21:93–118.

— 1889. The Batrachia of North America. Bull. U.S. Natl. Mus., (34):1–525, pls. 1–86.

Dunn, Emmett R. 1926. The salamanders of the family Plethodontidae. Smith College 50th Anniversary Publ., Northampton, Massachusetts, viii + 441 pp.

— 1942. An egg cluster of *Aneides ferreus*. Copeia, 1942:52.

Fitch, Henry S. 1936. Amphibians and reptiles of the Rogue River Basin, Oregon. Amer. Midland Nat., 17:634–652.

Gordon, Kenneth. 1939. The Amphibia and Reptilia of Oregon. Oregon State Monogr., 1:1–82.

Grinnell, Joseph, & Charles L. Camp. 1917. A distributional list of the amphibians and reptiles of California. Univ. California Publ. Zool., 17:127–208.

Hilton, William A. 1948. *Aneides* from Oregon. Herpetologica, 4:117–119.

— 1952. The gularis muscle in *Aneides* and *Hydromantes*. Copeia, 1952:282–283.

Lowe, Charles H., Jr. 1950. The systematic status of the salamander *Plethodon hardii*, with a discussion of biogeographical problems in *Aneides*. Copeia, 1950:92–99.

Myers, George S. 1930. Notes on some amphibians in western North America. Proc. Biol. Soc. Washington, 43:55–64.

Myers, George S., & T. Paul Maslin. 1948. The California plethodont salamander, *Aneides flavipunctatus* (Strauch), with description of a new subspecies and notes on other western *Aneides*. Proc. Biol. Soc. Washington, 61:127–135.

Slevin, Joseph R. 1928. The amphibians of western North America. Occas. Papers California Acad. Sci., 16:1–152.

Stebbins, Robert C. 1951. Amphibians of western North America. Univ. California Press, Berkeley. xviii + 539 pp.

— 1954. Amphibians and reptiles of western North America. McGraw-Hill Book Co., New York. xxiv + 528 pp.

Stejneger, Leonhard, & Thomas Barbour. 1917. A check list of North American amphibians and reptiles. Harvard Univ. Press, Cambridge, Massachusetts. iv + 125 pp.

Storer, Tracy I. 1925. A synopsis of the Amphibia of California. Univ. California Publ. Zool., 27:1–343.

Storm, Robert M. 1947. Eggs and young of *Aneides ferreus*. Herpetologica, 4:60–62.

Storm, Robert M., & Alvin R. Aller. 1947. Food habits of *Aneides ferreus*. Herpetologica, 4:59–60.

Van Denburgh, John. 1916. Four species of salamanders new to the state of California, with a description of *Plethodon elongatus*, a new species, and notes on other salamanders. Proc. California Acad. Sci., ser. 4; 6:215–221.

Wake, David B. 1963. Comparative osteology of the plethodontid salamander genus *Aneides*. Jour. Morphol., 113:77–118.

Wood, Wallace F. 1939. Amphibian records from northwestern California. Copeia, 1939:110.

D. B. Wake, University of Chicago, Chicago, Illinois.

Issued 15 October 1965. Publication is supported by National Science Foundation grant G24231.